

**REMARKS**

In accordance to the foregoing, claims 1 and 18 are currently amended. Claims 21 and 24 are withdrawn by the Examiner as being directed to a non-elected invention. Therefore, claims 1-3, 16, 18-20, 22-23, and 25 are under consideration. Claims 1-3, 16 and 18-25 are pending.

**INFORMATION DISCLOSURE STATEMENT OF JANUARY 11, 2005**

In the Office Action at item 12 on page 7, the information disclosure statement filed January 11, 2005 allegedly fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance . . . of each patent listed that is not in the English language. Additionally, at item 13, page 7, the Office Action states that the information disclosure statement filed January 11, 2005 allegedly fails to comply with 37 CFR 1.98(a)(2) which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. The Office Action indicates that the information cited therein has been placed in the file but not considered.

Applicants appreciate the Examiner's kind reminder to have all references considered. However, it appears that this matter has been substantially handled. There were two references in the January 11, 2005 Information Disclosure Statement that were not considered, JP 11-501684 and non-patent literature by Tatsumi et al. Subsequently, applicants informed the Examiner that US Patent No. 5,964,983 corresponds with JP 11-501684, and therefore applicants satisfied the English language requirements set forth in 37 CFR §1.98. Presumably, this is why the Examiner considered JP 11-501684 with the papers included in the May 29, 2008 Office Action.

With regard to the non-patent literature by Tatsumi et al., applicants' records indicate that a copy of this reference was submitted on January 11, 2005. However, an additional copy is enclosed herewith. It is noted that Tatsumi et al. was written in English, and therefore is in full compliance with the English language requirements of 37 CFR §1.98. For the convenience of the Examiner, an additional copy of Form PTO-1449 is enclosed herewith. On this form, only the non-patent literature by Tatsumi et al. is listed. It is respectfully requested that the Examiner initial next to the citation, sign the form and return a copy of same to the undersigned to indicate that Tatsumi et al. has been considered.

## CLAIM REJECTION UNDER 35 U.S.C. §112, SECOND PARAGRAPH

In the Office Action at item 6 on page 3, claims 18 and 20-22 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter the Applicants regard as the invention. The Office Action states:

"In paragraph [0048] of the published version of this application, the text thereof discloses 'although raw cotton, papilus grass, paper mulberry, paper bush, gampi, etc., are also usable, their use is sometimes not preferred because these raw materials are difficult to obtain stably, they contain non-cellulose components in a large amount, and they are difficult to handle' (see U.S. 2005/0272836, page 3, paragraph [0048], lines 1-5). However, the text of claim 18 using the terminology of said published application does not exclude 'the non-cellulose components' so indicated in the published application in view of the instantly claimed language, which renders the claims indefinite since it is not clear in the claims what 'non-cellulose components' has been excluded."

Applicants respectfully traverse the rejection. According to MPEP 2173.02, Applicants must only define the claimed subject matter with a reasonable degree of particularity and distinctness. Definiteness of claim language must be analyzed, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. *Id.*

The second paragraph of 35 U.S.C. §112 is a requirement that applicants clearly define the metes and bounds of the claims. That is, the claims must be clear regarding whether or not there is infringement. It is believed the language of the claims is perfectly clear. There is infringement of the language if a cellulose is derived any starting material except for raw cotton, papilus grass, paper mulberry, paper bush, gampi, beet pulp and fruit fiber pulp. On the other hand, if a water-dispersible cellulose is made from any of raw cotton, papilus grass, paper mulberry, paper bush, gampi, beet pulp and fruit fiber pulp, there is no infringement. Minor claim amendments have been made to further define this very clear line.

In paragraph [0048] of the published version of this application, Applicants state that "[a]lthough raw cotton, papilus grass, paper mulberry, paper bush, gampi, etc., are also usable, their use is sometimes not preferred because these raw materials are difficult to obtain stably, they contain non-cellulose components in a large amount, and they are difficult to handle" (U.S. 2005/0272836, "the '836 Publication," page 3, paragraph [0048], lines 1-5).

Claim 18 does not mention or exclude non-cellulose components as the presence of excessive non-cellulose components in these materials is merely one reason why these particular materials are excluded. See MPEP 2173.05(i) ("So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. 112, second paragraph."); *In re Wakefield*, 422 F.2d 897, 899, 904 (CCPA 1970) (holding claim definite which recited the limitation "said homopolymer being free from the proteins, soaps, resins, and sugars present in natural Hevea rubber" in order to exclude the characteristics of the prior art product, because each recited limitation was definite).

Applicants submit that an artisan in the field would recognize and be apprised of the scope of the invention of claim 18, and the rejection of claims 18, 20, and 22 under 35 U.S.C. § 112, second paragraph should be withdrawn. Perhaps applicants do not understand why the Examiner is rejecting the claims. If any confusion remains, the Examiner is requested to telephone the undersigned. Otherwise, withdrawal of the rejection is requested.

#### **CLAIM REJECTIONS UNDER 35 U.S.C. §103**

In the Office Action at item 10 on pages 4-6, claims 1-3, 16, and 18-20, 22-23 and 25 are rejected under 35 U.S.C § 103(a) as being obvious over Dinand et al (US Patent No. 5,964,983) ("Dinand"), in view of Turbak et al (US Patent No. 4,483,743) ("Turbak") or Battista (US Patent No. 3,146,168) ("Battista") or Kajita et al (JP Pub. No. 58013713 A) ("Kajita"). The reasons for the rejection are set forth in the Office Action mailed December 23, 2008 and therefore not repeated. The rejections are traversed and reconsideration is requested.

The Office Action states that since the microfibrillated cellulose disclosed in Dinand comprises 50% crystalline, Dinand discloses the invention of claim 1.

However, as described above, amended claim 1 recites "a crystallinity of 55% or more."

Additionally, regarding the raw materials for producing the microfibrillated cellulose disclosed in Dinand, Dinand discloses "it can also be applied to the treatment of any parenchyma, for example any citrus fruits (lemons, grapefruit, oranges) and most other fruits and vegetables" (see column 17, lines 55-57).

As a result, physical properties of the microfibrillated cellulose disclosed in Dinand differ greatly from those of the invention of claim 1 in the following points.

The microfibrillated celluloses disclosed in Dinand are stabilized by the bonded pectins and hemicelluloses, and therefore the absence of them causes instability (see column 14, lines 42-48).

Although claim 4 of Dinand mentions a crystallinity of 15% to 50%, the microfibrillated celluloses disclosed in the examples of Dinand have a crystallinity of 33%, (see column 13, line 54). In the invention of claim 1 as amended, the water-dispersible cellulose has a crystallinity of 55% or more. In this regard, Examples 1-3 of the specification specifically show that the water-dispersible cellulose of the Examples may have a crystallinity of 72-82%. In short, this indicates that the water-dispersible cellulose of the present invention contains much larger celluloses than the microfibrillated celluloses disclosed in Dinand. And, the water-dispersible cellulose of the invention of claim 1 may show a very good stability.

Indeed, in the case where the aqueous dispersion solution thereof having a concentration of 0.1% is subjected to a centrifugation at 1,000G for 5 minutes, 89.99% of the material is "the component stably suspensible in water" (defined at page 14, lines 4-16 of the specification, but not claimed). After this aqueous dispersion solution is left for a few months, most of "the component stably suspensible in water" therein does not generate sedimentation.

In view of the above circumstances, the water-dispersible cellulose of the invention of claim 1 is not required to be stabilized by the bonded pectins and hemicelluloses. Stabilization may be present from the tangles between the celluloses having the fine and elongated fibers. And, the shape of celluloses needed to provide such stabilization as the water-dispersible cellulose of the invention of claim 1 recites is a length (major axis) of 0.5-30  $\mu$ m and a width (minor axis) of 2-600 nm, and a length/width ratio (major axis/minor axis) of 20-400.

Thus, it is apparent that since the raw materials used in Dinand quite differ from the invention of claim 1 (specifically, the differences in the amounts of "non-cellulose components" contained in the raw materials as reflected by the claim language relating to the differences of a crystallinity and an  $\alpha$ -cellulose content of the raw materials), the physical properties of the microfibrillated cellulose disclosed in Dinand differ greatly from those of the invention of claim 1. Accordingly, Applicants submit that the cellulose of the invention of claim 1 is patentably distinguishable over the cellulose disclosed in Dinand.

(2) Differences between Turbak (US Patent No. 4,483,743) and the Present Invention

The microfibrillated celluloses disclosed in Turbak are obtained by repeatedly passing a liquid suspension of cellulose through a small diameter orifice in which the suspension is subjected to a pressure drop of at least 3000 psig (about 21 MPa) (see column 2, lines 8-9). In

this regard, Turbak discloses that 5000-8000 psi (about 34-55 MPa) is preferable (see column 4, lines 11-12). Also, the pressure shown in the Examples disclosed in Turbak is only 8000 psi (about 55 MPa).

To understand the differences in the cellulose products, it is believed helpful to review the unclaimed differences in the production processes. Applicants' specification discloses that the microfibrillated celluloses disclosed in Turbak and so on have insufficient levels of micronization. (See page 2, line 15 of the specification describing JP-A-56-100801, etc., which corresponds to the microfibrillated celluloses disclosed in Turbak). And, in view of the circumstances, the water-dispersible cellulose of the invention of claim 1 may be prepared by treating with a high pressure of 60-414 MPa (see page 32, line 17 to page 34, line 17).

Furthermore, the Applicants have actually produced the microfibrillated cellulose according to the method disclosed in Example 1 of Turbak (i.e. the method of conducting 11 passes through a Manton-Gaulin homogenizer at 8000 psi (about 55 MPa)), and have measured the produced microfibrillated cellulose using the measuring method according to the specification (i.e. the measuring method of preparing 0.1 % aqueous solution thereof, and then analyzing "the component stably suspensible in water" under the conditions of a centrifugation at 1,000G for 5 minutes). As a result, the applicants have confirmed that "the component stably suspensible in water" is 15%. Therefore, it is apparent that the microfibrillated cellulose disclosed in Turbak does not satisfy the features "*the water-dispersible cellulose comprising 30% by weight or more of a component stably suspensible in water*" of the invention of amended claim 1.

Thus, Applicants assert that the water-dispersible cellulose of the invention of claim 1 is a new fine-fibrous cellulose, and is not obvious over Dinand and Turbak, alone or as a combination.

*Differences between Battista (US Patent No. 3, 146,168) And the Present invention*

Battista discloses the cellulose crystalline particles having a size of 1-300  $\mu\text{m}$  obtained by hydrolyzing a pulp (column 3, lines 1-5). Additionally, although Battista discloses that degree of polymerization may be 500, hydrolysis of the pulp is required (column 2, line 30).

However, the water-dispersible cellulose of the invention of claim 1 is a fine-fibrous cellulose. Although not claimed, this cellulose may be produced by elongating the pulp using a physical treatment and not by a hydrolysis treatment. In other words, in order to produce the fine-fibrous cellulose, a physical treatment and not a hydrolysis treatment may be used.

Accordingly, the cellulose crystalline particle disclosed in Battista apparently differs from the water-dispersible cellulose described in the application in terms of the unclaimed methods for producing cellulose, and in terms of the shapes and physical properties of cellulose obtained thereby (see page 2, lines 5-13).

Comparing the water-dispersible cellulose of the invention of claim 1 with the cellulose crystalline particle disclosed in Battista, the cellulose crystalline particle disclosed in Battista is expected to have a much larger width (minor axis) than the claimed width of a ~~width ratio (minor axis)~~ of 2-600 nm. Thereby the Battista cellulose also has a very small length/width ratio (major axis/minor axis) in comparison to that claimed in claim 1.

Thus, it is apparent that Battista teaches away from the invention of claim 1 which provides the fine-fibrous cellulose.

(4) Differences between Kajita (JP-A-58013713) and the Present Invention

Kajita defines a loss tangent as an intensity index of solid fibers. Therefore, the loss tangent disclosed in Kajita is not a loss tangent of a 0.5 wt. % aqueous dispersion. Although not claimed, the loss tangent mentioned the claims may relate to the degree of entanglements of cellulose network structures in aqueous dispersion, i.e. gelatious property which the loss tangent of the specification application indicates. In the other words, the meaning of a loss tangent disclosed in Kajita is quite different from the meaning of a loss tangent in the specification.

In the circumstances, it is apparent that the range of  $\tan \delta$  "less than 0.6" recited in claims cannot be rendered obvious in view of a loss tangent " $\tan \delta:0.06$ " disclosed in Kajita.

Thus, because Kajita teaches away from the invention, Applicants submit that the claims are patentably distinguished from Dinand in view of Kajita, and are in condition for allowance.

**CONCLUSION**


If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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